Claims

What is claimed is:

1. A method of defining a device color profile, comprising:

(a) storing a first set of color descriptions, wherein each color description describes a color of a different printed test patch in a first target and includes: (i) a set of color component values defined in an overlapping color space, and (ii) at least one color component cross term;

(b) obtaining a second set of color descriptions, wherein each color description in the second set describes a color of a different printed test patch in a second target and includes: (i) a set of color component values defined in the overlapping color space, and (ii) at least one color component cross term; and

(c) using the stored first set of color descriptions and the second set of color descriptions to define a device color profile.

2. The method of claim 1, wherein the overlapping color space is in accordance with the CIE 1931 standard observer.

3. The method of claim 1, wherein the first target includes more test patches, the second target and the overlapping color space is in accordance with CIE 1964 standard observer.

4. The method of claim 1, wherein the act of obtaining includes:

using a colorimeter to measure the color of a printed test patch in the second target so as to generate a set of XYZ values; and

computing color component cross term from the set of XYZ values.

5. The method of claim 1, wherein the method is performed by a color printing device.

6. A color printing device, comprising:

(a) at least one memory storing a plurality of color.

descriptions each describing a color of a different test patch in a master target, wherein each one of the color descriptions include a set of color components and at least one overlapping cross term;

(b) a colorimeter; and

(c) a control system operable to:

print a re-characterization target that includes a plurality of re-characterization test patches;

control the colorimeter to measure the color of each of the printed re-characterization test patches; and

compute a device color profile using the color measurements of the printed re-characterization test patches and the plurality of color descriptions stored in the memory.

7. The color printing device of claim 6, comprising:

(e) a media transport system; and wherein the control system if further operable to control the media transport system to move at least one media that includes the printed re-characterization test patches in proximity to the colorimeter to enable the colorimeter to measure the color of each of the plurality of test patches.

8. The color printing device of claim 6, wherein the re-characterization target includes a lesser number of test patches than the master target.

9. The color printing device of claim 6, wherein the set of color components are XYZ tristimulus values.

10. The color printing device of claim 6, wherein the memory also stores the re-characterization target.

11. A characterization system, comprising:

(a) means for accessing a first plurality of color descriptions each describing a color of a different printed test patch in a printed master target;

(b) means for generating a second plurality of color descriptions each describing a color of a different printed test patch in a printed re-characterization target;

(c) means for computing a device color profile from the first plurality of color descriptions and the second plurality of color descriptions; and

wherein each of the first plurality of color descriptions and each of the second plurality of color descriptions include a set of color components that describe a color and at least one overlapping cross term.

12. The characterization system of claim 11, wherein the re-characterization target includes a lesser number of test patches than the master target.

13. The characterization system of claim 11, wherein the means for accessing includes a memory that stores the first plurality of color descriptions.

14. The characterization system of claim 11, wherein the means for generating includes a colorimeter for measuring the printed test patch in the printed re-characterization target.

15. The re-characterization system of claim 11, wherein the characterization system is incorporated within a printing device.

16. The characterization system of claim 11, wherein each of the first plurality of color descriptions and each of the second plurality of color descriptions include a set of XYZ tristimulus values that describe a color and at least one ZYZ overlapping cross term.

17. The characterization system of claim 11, wherein each of the first plurality of color descriptions and each of the second plurality of color descriptions include a set of RGB values that describe a color and at least one RGB overlapping cross term.

18. One or more computer-readable media having computer executable instructions embodied thereon which, when executed by one or more processors in a printing device, cause the one or more processors to:

(a) use a first plurality of color descriptions and a second set of color descriptions to compute a device color profile;

wherein each of the first plurality of color descriptions describe a color of a different test patch of a first plurality of test patches in terms of at least three color component values and at least one overlapping cross term; and

wherein each of the second plurality of color descriptions describe a color of a different test patch of a second plurality of test patches in terms of at least three color component values and at least one overlapping cross term.

19. The one or more computer-readable media of claim 18, wherein the computer executable instructions cause the one or more processors to:

(b) access the first plurality of color descriptions from at least one memory;

(c) access the second plurality of color descriptions from at least one memory.

20. The one or more computer-readable media of claim 18, wherein the computer executable instructions cause the one or more processors to:

(b) access the first plurality of color descriptions from at least one memory in a printing device;

(c) generate the second plurality of color descriptions using output received from a colorimeter incorporated within the printing device;

wherein the second plurality of test patches is less than the first plurality of test patches.

21. The one or more computer-readable media of claim 18, wherein the first and second plurality of test patches are printed.

22. The one or more computer-readable media of claim 18, wherein the first and second plurality of test patches are displayed.

23. A method of defining a device color profile, comprising:

(a) printing a first plurality of test patches on a first media type;

(b) using a colorimeter to measure the color of each printed test patch included in the first plurality of printed test patches to obtain a set of XYZ tristimulus values;

(c) first storing a color description of each printed test patch included in the first plurality of test patches, where the color description includes a set of XYZ tristimulus values and at least one XYZ cross term;

(d) printing a second plurality of test patches on a second media type;

(e) using the colorimeter to measure the color of each printed patch included in the second plurality of printed test patches;

(f) second storing a color description of each printed test patch included in the second plurality of test patches, wherein the color description includes a set of XYZ tristimulus values and at least one XYZ cross term;

(g) using the color descriptions stored in the first storing act and the color descriptions stored in the second storing act to define a device color profile.

24. The method of claim 22, wherein the first media type is different than the second media type.

25. The method of claim 22, wherein the number of patches in the first plurality of printed test patches is more than the number of patches in the second plurality of test patches.

26. The method of claim 22, wherein act (a) and act (d) is performed by a color printing device.